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Education:

Ph.D., 1991, Cornell University, Physical Chemistry (Theoretical Chemistry minor)

M.S., 1986, Cornell University; Physical Chemistry, Theoretical Chemistry minor.

B.S., 1983, West Virginia Wesleyan College; Chemistry major, Mathematics minor.

Professional Experience:

1997 to present:

– Technical Staff Member, Los Alamos National Laboratory.
– Interim Chief Scientist (2002-2003) of Center for Integrated Nanotechnologies (CINT) at Los Alamos and Sandia National Laboratories.
– Leader of Soft, Biological and Composite Nanomaterials Scientific Thrust area within CINT (2001-present; http://cint.lanl.gov).
– Leader of Biomolecular Materials, Spectroscopy and Imaging Team at LANL (2005-present; http://www.lanl.gov/bmsi).
– Interim Co-Director, CINT (2008-2009).

1994 to 1997:

– J. Robert Oppenheimer Fellow, Los Alamos National Laboratory, Chemical Science and Technology Division.

1991 to 1994:

– National Institutes of Health Postdoctoral Fellow, Professor Richard A. Mathies, Department of Chemistry, University of California, Berkeley.

Research Interests:

Development and applications of thin-film nanostructured self-assembled materials and biomimetic membrane architectures; Self-assembled materials; Bio-inspired materials; Materials for alternative energy applications; Biosensor technology; Spectroscopic studies of protein structure and dynamics; Applications of spectroscopic techniques to the study of electron and energy transfer processes in biology, chemistry, and materials science; Theory of electron and energy transfer; Experimental and theoretical development of time-resolved and nonlinear spectroscopies, optical imaging methods, surface-specific spectroscopies, and Raman spectroscopies.

Selected and Recent Professional Activities:

Member of National Institutes of Health special study sections, June, 2000; October, 2000, and nanotechnology special emphasis panels, July 2003, July 2004, February 2007, July 2011; *ad hoc* member of BBCA study section, February, 2001.

Member External Advisory Committee, Nano-Bio Interfaces Center, an NSF funded center at the University of Pennsylvania.

Member External Advisory Committee, UNM-Harvard Partnership for Research in Education (PREM): Leadership in Biomaterials, an NSF funded center at University of New Mexico.

Co-organizer of symposia on "Developing Nano-bio Interfaces" for 2005 Materials Research Society Spring meeting and on "Spatially Resolved Characterization of Local Phenomena in Materials and Devices" for 2002 Materials Research Society Fall meeting.

Member of Nanoscience Informal Science Education (NISE) Subcommittee of the Materials Research Society, 2006-present.

Invited participant in National Nanotechnology Initiative workshop on "Nanoscience Research for Energy Needs", Washington D.C., March 2004.

Acting Co-Director (2008-2009), scientific thrust leader (2001-present) and interim Chief Scientist (2002-2003) for the Center for Integrated Nanotechnologies, a Department of Energy nanoscale science research center jointly operated by Sandia and Los Alamos National Laboratories, with annual budget of ≈$20M.

Member of organizing committee for the LANSCE Neutron Scattering Winter School, Los Alamos National Laboratory, January 2004.

Chair of Los Alamos National Laboratory Fellows Selection Committee, 2006.

Chair of Los Alamos National Laboratory Directed Research Science Advisory Panel in Materials Science, 2009.

Member of Los Alamos National Laboratory Directed Research Strategy Team, Laboratory Directed Research and Development program, 2000-2002, 2010-present.

Member of Executive Committee, Center for Nonlinear Studies, Los Alamos National Laboratory, 1999-present.

Honors and Recognitions:

Los Alamos National Laboratory Fellows Prize for Leadership (2008)
J. Robert Oppenheimer Fellowship (Los Alamos National Laboratory, 1994-1997).
National Institutes of Health Postdoctoral Fellowship (UC Berkeley, 1991-1994).
Procter and Gamble Graduate Fellowship (Cornell University, 1990).
National Science Foundation Graduate Fellowship (Cornell University, 1984-1987).
Dow Graduate Fellowship (Cornell University, 1983).

Professional Affiliations:

Biophysical Society
American Chemical Society
American Physical Society
Materials Research Society
American Association for the Advancement of Science
Society for Applied Spectroscopy

Educational and Teaching Activities:

Past or current mentor of nine postdoctoral fellows, four undergraduate students, and one graduate student.

Adjunct Faculty, Department of Chemical and Nuclear Engineering, University of New Mexico

Co-instructor for "Chemistry and Physics of Nanomaterials, University of New Mexico (Chem 471/Phys 510/NSMS 510), Spring 2008; Guest lecturer for "Chemistry and Physics of Nanomaterials", University of New Mexico (Chem 471/Phys 410/NSMS 510), Fall 2006.

References:

Professional references available upon request.

Selected and Recent Publications:

(From total of 70 peer-reviewed publications with >1800 total citations; July 2011)

D. Magana, D. Parul, R.B. Dyer, A.P. Shreve, "Implementation of time-resolved step-scan Fourier transform infrared (FT-IR) spectroscopy using a kHz repetition rate pump laser," *Appl. Spectrosc.* **65** (2011) 535-542.

J.G. Duque, H. Chen, A.K. Swan, A.P. Shreve, S. Kilina, S. Tretiak, X. Tu, M. Zheng, S.K. Doorn, "Violation of the Condon approximation in semiconducting carbon nanotubes," *ACS Nano* **5** (2011) 5233-5241.

H.H. Tsai, Z.H. Xu, R.K. Pai, L.Y. Wang, A.M. Dattelbaum, A.P. Shreve, H.-L. Wang, M. Cotlet, "Structural dynamics and charge transfer via complexation with fullerene in large area conjugated polymer honeycomb thin films," *Chem. Mater.* **23** (2011) 759-761.

Y. Bao, H.C. Yeh, J. Sharma, S. Ivanov, A.P. Shreve, C. Zhong, J.H. Werner, J.S. Martinez, "Formation and stabilization of fluorescent Au nanoclusters using small molecules," *J. Phys. Chem. C* **114** (2010) 15879-15882.

J. Gao, H.-L. Wang, A. Shreve, R. Iyer, "Fullerene derivatives induce premature senescence: A new toxicity paradigm or novel biomedical applications," *Toxicology and Appl. Pharmacology* **244** (2010) 134-143.

C.C. Wang, Y. Gao, A.P. Shreve, C. Zhong, L. Wang, K. Mudalige, H.-L. Wang, M. Cotlet, "Thermochromism of a poly(phenylene vinylene): Untangling the roles of polymer aggregate and chain conformation," *J. Phys. Chem. B* **113** (2009) 16110-16117.

G.A. Sherwood, R. Cheng, T.M. Smith, J.H. Werner, A.P. Shreve, L.A. Peteanu, J. Wildeman, "Aggregation effects on the emission spectra and dynamics of model oligomers of MEH-PPV," *J. Phys. Chem. C* **113** (2009) 18851-18862.

J.H. Werner, G.A. Montaño, A.L. Garcia, N.A. Zurek, E.A. Akhadov, G.P. Lopez, A.P. Shreve, "Formation and dynamics of supported phospholipid membranes on a periodic nanotextured substrate," *Langmuir* **25** (2009) 2986-2993.

R. Martin, H.-L. Wang, S. Iyer, G.A. Montaño, J.S. Martinez, A.P. Shreve, Y. Bao, C.-C. Wang, Z. Chang, Y. Gao, J. Gao, R. Iyer, "Impact of physicochemical properties of engineered fullerenes on key biological responses, *Toxicology and Appl. Pharmacology* **234** (2009) 58-67.

A.P. Shreve, M.C. Howland, A.R. Sapuri-Butti, T.W. Allen, and A.N. Parikh, "Evidence for leaflet-dependent redistribution of charged molecules in fluid supported phospholipid bilayers," *Langmuir* **24** (2008) 13250-13253.

D.J. Hilton, R.P. Prasankumar, E.J. Schelter, V.K. Thorsmølle, S.A. Trugman, A.P. Shreve, J.L. Kiplinger, D.E. Morris, and A.J. Taylor, "Ultrafast spectroscopy of the Uranium(IV) and Thorium(IV) bis(ketimide) complexes (C5Me5)2An[-N=C(Ph)(CH2Ph)]2 (An=Th, U)," *J. Phys. Chem. A* **112** (2008) 7840-7847.

A.E. Oliver, E.L. Kendall, M.C. Howland, B. Sanii, A.P. Shreve, and A.N. Parikh, "Protecting, patterning, and scaffolding supported lipid membranes using carbohydrate glasses," *Lab on a Chip* **8** (2008) 892-897.

C. Knutson, G. Benkö, T. Rocheleau, F. Mouffouk, J. Maselko, L. Chen, A.P. Shreve, and S. Rasmussen, "Metabolic photo-fragmentation kinetics for a protocell," *Artificial Life*, **14** (2008) 189-201.

R.C. Rocha, F.N. Rein, H. Jude, A.P. Shreve, J.J. Concepcion, and T.J. Meyer, "Observation of three intervalence-transfer bands for a class II-III mixed-valence complex of ruthenium " *Angew. Chem. Intl. Ed.*, **47** (2008) 503-506.

T.-H. Yang, C.K. Yee, M.L. Amweg, S. Singh, E.L. Kendall, A.M. Dattelbaum, A.P. Shreve, C.J. Brinker, and A.N. Parikh, "Optical detection of ion-channel induced proton transport in supported phospholipid bilayers," *Nano Letters*, **7** (2007) 2446-2451.

A.P. Shreve, E.H. Haroz, S.M. Bachilo, R.B. Weisman, S. Tretiak, S. Kilina, and S.K. Doorn, "Determination of exciton-phonon coupling elements in single-walled carbon nanotubes by Raman overtone analysis," *Phys. Rev. Lett.* **98** (2007) 037405.

S.K. Doorn, S. Goupalov, B.C. Satishkumar, A.P. Shreve, E.H. Haroz, S.M. Bachilo, and R.B. Weisman, "Raman studies of electron-phonon coupling in single walled carbon nanotubes," *Phys. Stat. Solidi B – Basic Solid State Phys.* **243** (2006) 3171-3175.

R.C. Rocha and A.P. Shreve, "Characterization of infrared vibrational activity in specific totally symmetric bridging modes of localized-to-delocalized mixed-valence systems," *Chem. Phys.* **326** (2006) 24-32 (invited).

R.C. Rocha, M.G. Brown, C.H. Londergan, C.P. Kubiak, and A.P. Shreve, "Intervalence resonant Raman spectroscopy of strongly coupled mixed-valence cluster dimers of ruthenium," *J. Phys. Chem. A* **109** (2005) 9006-9012.

A.M. Dattelbaum, M.L. Amweg, J.D. Ruiz, L.E. Ecke, A.P. Shreve, and A.N. Parikh, "Surfactant removal and silica condensation during the photochemical calcination of thin-film silica mesophases," *J. Phys. Chem. B* **109** (2005) 14551-14556.

M.C. Howland, A.R.S. Butti, S.S. Dixit, A.M. Dattelbaum, A.P. Shreve, A.N. Parikh, "Phospholipid morphologies on photochemically patterned silane monolayers," *J. Amer. Chem. Soc.* **127** (2005) 6752-6765.

D.A. Doshi, A.M. Dattelbaum, E.B. Watkins, C.J. Brinker, B.I. Swanson, A.P. Shreve, A.N. Parikh, and J. Majewski, "Neutron reflectivity study of lipid membranes assembled on ordered nanocomposite and nanoporous silica thin films," *Langmuir* **21** (2005) 2865-2870.

R.J. Magyar, S. Tretiak, Y. Gao, H.-L. Wang and A.P. Shreve, "A joint theoretical and experimental study of polyphenylene-acetylene molecular wires," *Chem. Phys. Lett.* **401** (2005) 149-156.

G.A. Montaño, A.M. Dattelbaum, H.-L. Wang and A.P. Shreve, "Enhanced photoluminescence from poly(phenylene vinylene):dendrimer polyelectrolyte assemblies in solution," *Chem. Commun.* (2004) 2490-2491.

R.C. Rocha and A.P. Shreve, "Exploring the localized-to-delocalized boundary in mixed-valence systems using infrared spectroelectrochemistry," *Inorg. Chem.* **43** (2004) 2231-2233.

W.E. Buschmann, S.D. McGrane and A.P. Shreve, "Chemical tuning of nonlinearity leading to intrinsically localized modes in halide-bridged mixed-valence platinum materials," *J. Phys. Chem. A* **107** (2003) 8198-8207.

S.D. McGrane and A.P. Shreve, "Temperature dependent Raman spectra of triaminotrinitrobenzene: Anharmonic mode couplings in an energetic material," *J. Chem. Phys.* **119** (2003) 5834-5841.

R.E. Da Re, C.J. Kuehl, M.G. Brown, R.C. Rocha, E.D. Bauer, K.D. John, D.E. Morris, A.P. Shreve and J.L. Sarrao, "Electrochemical and spectroscopic characterization of the novel charge-transfer ground state in diimine complexes of ytterbocene," *Inorg. Chem.* **42** (2003) 5551-5559.

A.M. Dattelbaum, M.L. Amweg, L.E. Ecke, C.K. Yee, A.P. Shreve and A.N. Parikh, "Photochemical pattern transfer and enhancement of thin-film silica mesophases," *Nano Letters* **3** (2003) 719-722.

Books and Book Chapters:

S. Rasmussen, J. Bailey, J. Boncella, L. Chen, G. Collis, S. Colgate, M. DeClue, H. Fellerman, G. Goranovic, Y. Jiang, C. Knutson, P.-A. Monnard, F. Mouffouk, P. Nielsen, A. Sen, A. Shreve, A. Tamulis, B. Travis, P. Weronski, W. Woodruff, J. Zhang, X. Zhou, and H. Ziock, "Assembly of a minimal protocell", in *Protocells: Bridging nonliving and living matter*, Eds., S. Rasmussen, M.A. Bedau, L. Chen, D. Deamer, D.C. Krakauer, N.H. Packard and P.F. Stadler, (MIT Press: 2008)

Spatially Resolved Characterization of Local Phenomena in Materials and Nanostructures, Eds. J. Piqueras, F.R. Zypman, D.A. Bonnell, A.P. Shreve; Materials Research Society Symposium Proceedings, Volume 738 (Materials Research Society: Warrendale, PA 2003).

Patents, Applications and Disclosures:

"3-Dimensional imaging at nanometer resolutions", J.H. Werner, P.M. Goodwin, A.P. Shreve. Issued March 9, 2010. U.S. Patent 7675045.

"Planar optical waveguide based sandwich assay sensors and processes for the detection of biological targets including protein markers, pathogens and cellular debris", J.S. Martinez, B.I. Swanson, K.M. Grace, W.K. Grace, A.P. Shreve. Issued June 2, 2009. U.S. Patent 7541197.